

POWERFUL PARTNERSHIPS



ANNUAL REPORT 2016
Western Area Power Administration

Mission

Market and deliver clean, renewable, reliable, cost-based federal hydroelectric power and related services

Vision

Continue to provide premier power marketing and transmission services to our customers, as well as contribute to enhancing America's energy security and sustaining our nation's economic vitality



About WAPA



APA is a power marketing administration under the Department of Energy that markets and transmits wholesale electrical power across 15 states through an integrated 17,000-plus circuit-mile, high-voltage transmission system.

Employees work around the clock to sell power and operate and maintain the transmission system that provides energy to:

- Cooperatives
- Federal and state agencies
- Investor-owned utilities
- Municipalities
- Native American tribes
- Public utility and irrigation districts
- Power marketers
- Joint power authorities
- Transportation districts
- Independent system operator corporations
- Regional transmission organizations

Our customers then provide electric service to more than 40 million people from Texas to the Dakotas, and from the lakes of Minnesota to the California coastline.

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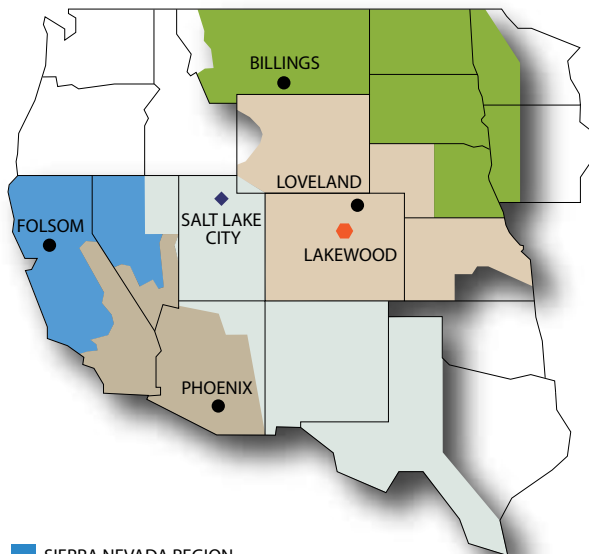
Service and Marketing Areas

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APA delivers power from 10 rate-setting projects that encompass both WAPA's transmission facilities and the power-generating facilities owned and operated by the Bureau of Reclamation, the Army Corps of Engineers and the International Boundary and Water Commission. These projects are made

up of 14 multipurpose water resource projects, one coal-fired plant and one transmission project. Power rates are set to recover all costs, with interest, associated with power delivery, such as annual operating costs, the specific allocated multipurpose costs associated with recovering the federal investment in the generation facilities and other costs assigned to power for repayment.

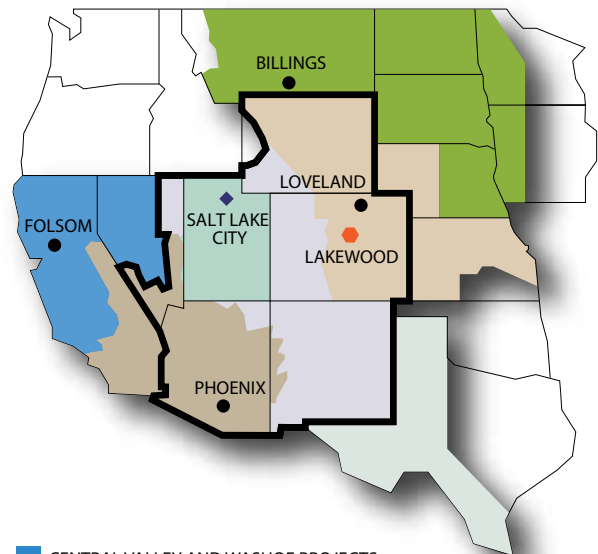
SERVICE AREAS



- SIERRA NEVADA REGION
- DESERT SOUTHWEST REGION
- COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER
- ROCKY MOUNTAIN REGION
- UPPER GREAT PLAINS REGION
- STATE BOUNDARIES
- REGIONAL OFFICE
- HEADQUARTERS
- ◆ COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER OFFICE

A service area identifies a WAPA region's geographic territory while a marketing area defines the boundaries of a hydropower project's customer base.

MARKETING AREAS



- CENTRAL VALLEY AND WASHOE PROJECTS
- PARKER-DAVIS, BOULDER CANYON AND CENTRAL ARIZONA PROJECTS
- FALCON-AMISTAD PROJECT
- PROVO RIVER PROJECT
- LOVELAND AREA PROJECTS
- PICK-SLOAN MISSOURI BASIN PROGRAM—WESTERN DIVISION AND FRYINGPAN-ARKANSAS PROJECT
- PICK-SLOAN MISSOURI BASIN PROGRAM—EASTERN DIVISION
- SALT LAKE CITY AREA/INTEGRATED PROJECTS
COLORADO RIVER STORAGE, COLLRAN, RIO GRANDE, SEEDSKADEE AND DOLORES PROJECTS
- STATE BOUNDARIES
- REGIONAL OFFICE
- HEADQUARTERS
- ◆ COLORADO RIVER STORAGE PROJECT MANAGEMENT CENTER OFFICE

Operational Summary¹

(unaudited)
(dollars in thousands)

	2016	2015	2014
Sales of electric power	\$893,663	\$979,696	\$1,014,000
Income transfers to generating agencies	(389,715)	(385,354)	(524,781)
Transmission and other operating revenues	464,721	412,415	403,907
Total operating expenses	726,360	731,164	860,333
Operation and maintenance	288,570	297,075	297,675
Purchased power	109,596	187,013	333,145
Purchased transmission services	149,943	78,947	73,325
Net interest expense ²	12,381	7,174	128,242
Net revenues	229,928	268,419	(95,449)
Completed utility plant	4,325,697	4,177,731	3,949,394
Payable to U.S. Treasury	594,368	622,064	635,798

¹ This summary represents WAPA's stand-alone operational information for the past three years. WAPA will publish its combined financial statements separately after the independent auditor's opinion is issued.

² Effective Sept. 30, 2014, management responsibility of Treasury Account Symbol 5000.27 within the Reclamation Fund was transferred to WAPA and interest payable to the Department of Treasury is eliminated for combination purposes commencing in 2015. \$108 million and \$140 million of interest payable to Treasury was eliminated for the years ended Sept. 30, 2016 and 2015, respectively.

Administrator and CEO's letter

Today we stand at the forefront of a rapidly changing industry. Unfolding before us are opportunities we have not seen in our organization's history. That is why our staff, in partnership with customers, have been laser focused on the dynamic energy environment.

Our *Strategic Roadmap 2024* drives and sharpens WAPA's focus. We are committed to keeping the Roadmap current, agile and relevant. The collaborative work we began two years ago with customers, the Department of Energy and our employees has held up, served us well and remains unchanged. It guides us as we navigate industry changes and intersect with the public.

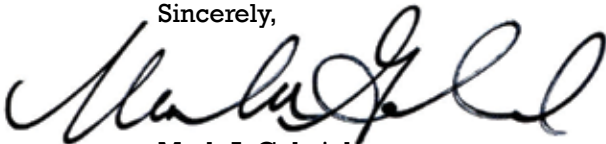
We have seen many challenges this year; they have spurred us forward. Through our many powerful partnerships, we were able to persevere and innovate. Our internal audit and compliance group helped us improve systems and reduce costs. When we received more security demands, we responded by meeting and exceeding those requirements cost-effectively. Our Critical Infrastructure Protection team turned the huge investment prescribed by the North American Electric Reliability Corporation and the new CIP version 5 standards, which could have posed significant hurdles for us, into a world-class program. And we fully joined the Southwest Power Pool regional transmission organization at a net savings to our customers.

In light of these and other achievements, it is easy for me to proclaim that Fiscal Year 2016 was nothing short of amazing. Through our industry engagement, customer partnerships, employee dedication, government collaborations and public outreach, WAPA accomplished great things. In fact, in FY 2016 our collaborative work returned \$429 million to the U.S. Treasury and additional debt repayment.

To provide information in a more timely manner, we are presenting this year's annual report in a new format. On Page 3, you saw a summary of WAPA's operational information for the fiscal year. When independent auditors issue their opinion, we will publish our combined financial statements, which include information from the generating agencies (the Bureau of Reclamation, Army Corps of Engineers and the International Boundary and Water Commission).

At WAPA, we work closely with our customers, making critical investments together and leveraging our powerful partnerships for shared success. Together, we will move forward in a secure, affordable and reliable energy future that charts the course toward achieving our mission in a dynamic and complex energy frontier.

Sincerely,



Mark A. Gabriel
Administrator and CEO





Powerful Partnerships

W

APA's mission—to market and deliver clean, renewable, reliable, cost-based federal hydroelectric power and related services—cannot be carried out in a vacuum. Operating more than 17,000 miles of transmission line across a 1.4-million-square-mile, 15-state footprint requires partnership at all levels of the organization.

Specifically, it requires partnership with our customers and our neighbors. As a federal organization and a wholesale electricity provider, responsible for critical facilities in the bulk electric system, it requires industry and government partnerships. As stewards of the natural resources found in our customer service territory, and as an organization that markets power to utilities that serve more than 40 million homes in the West, it requires partnership with the public.

Our commitment to delivering on our mission demands that we continue to cultivate these powerful partnerships.

WAPA's *Strategic Roadmap 2024*—launched two years ago—outlines the four critical pathways that will keep the organization on track to achieve its goals over the next 10 years. Organizational efforts in Fiscal Year 2016 focused intensely on the second pathway, Mutually Beneficial Partnerships, and the ways WAPA builds and sustains productive relationships that enhance trust, operational effectiveness and business opportunities for all parties.

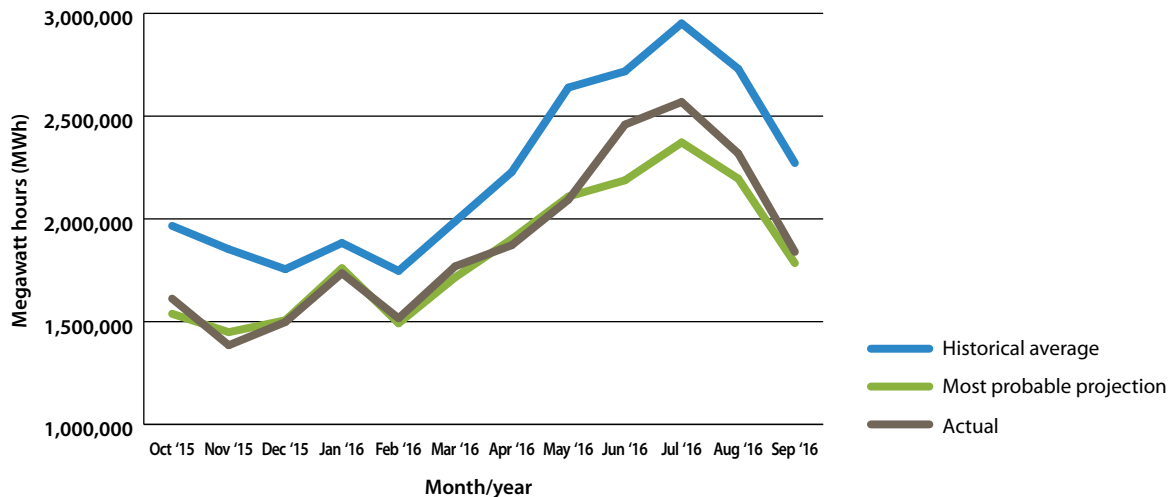
In the pages that follow, you will see example after example of WAPA's powerful partnerships in action, and the results that come from those collaborative and innovative efforts.



Power of water

Being in the business of marketing and delivering hydroelectric power, it is impossible to overlook the influence water has on WAPA's operations. Water conditions are the one area of our business over which the organization has no control. Regardless of the amount of water any given year brings and the amount of hydropower generated, WAPA must deliver on its mission and fulfill its commitments to customers.

**Western Area Power Administration
FY 2016 Hydropower Generation Average vs. Projected vs. Actual**



Despite drought and below-average conditions in Fiscal Year 2016, WAPA employed strategies and practices to help offset purchased power costs.

During FY 2016, WAPA delivered 22,667,878 megawatt-hours of hydroelectric power and 3,009,312 MWh of purchased power.

Lake Powell, part of the Colorado River Storage Project, ended the fiscal year at around 53 percent of capacity; throughout the fiscal year it held between 45 and 57 percent.

WAPA's Desert Southwest region's water year precipitation was 96 percent of average. Lake Mead ended the fiscal year with an elevation of 1,075 feet, about 25 feet above the minimum generation level.

In Rocky Mountain the overall reservoir content was above average for the water year, peaking in May at 128 percent of average and ending with 120 percent in September. The Loveland Area Projects area experienced dryer than normal conditions, but remained mostly drought free.

As of September, Sierra Nevada's cumulative precipitation was 116 percent of the water year average.

Upper Great Plains experienced dry conditions this year, which caused below-average inflows. The September actual system runoff was 91 percent of normal.

How does WAPA do this?

WAPA manages drought impacts through planning, partnership and innovation. The narrative on the next 20 pages outlines the powerful partnerships WAPA has in industry, with customers, among employees, throughout government and with the public that result in the ability to keep costs down regardless of hydrology conditions and the inevitable need to purchase power.



Net generation

22,668

gigawatt-hours

or

84.8

percent of average



Industry

Due to its expansive service territory and strong relationships, WAPA is well positioned to collaborate with utility experts about ongoing changes in the energy industry. These innovative partnerships help balance the demand for reliable power to support our energy-dependent economy with the shifting makeup of energy resources and emerging technologies.

With as much change as the industry has seen over the past few years, WAPA recognizes that the industry is poised for even more dramatic change in the future. WAPA's attention to both the big picture and the small details of industry trends help to carve a clear path forward.

WAPA joins Southwest Power Pool

Joining the Southwest Power Pool turned out to be one of WAPA's most significant accomplishments of Fiscal Year 2016. Joining SPP is a powerful example of a cost-saving initiative implemented in partnership with customers that provides greater flexibility by creating more options for buying and selling power. This, in turn, reduces constraints in delivering power and helps keep costs low for customers.

To ensure a smooth transition to SPP on Oct. 1, 2015, WAPA took many steps—including converting to SPP transmission service, registering generation and load with SPP, creating new interfaces with SPP, employee training and market trials—to prepare for operation under SPP's transmission tariff and energy market.

As an SPP member, UGP's operations require continued customer interaction for load service coordination and constant evaluation of market strategies, offering day-ahead hydropower bids and fulfilling hourly load obligations. UGP employees also reconcile and analyze market activity settlements, ensuring accurate and informative financial results of operations.

The large amount of pre-integration planning and setup by the dedicated staff of the integration team resulted in a seamless integration with the SPP, with the interconnection's benefits exceeding WAPA's expectations.

Joining SPP is a powerful example of a cost-saving initiative implemented in partnership with customers that provides greater flexibility by creating more options for buying and selling power.

UGP saw more in first-year savings
and avoided costs than the
\$11.5 million
that was initially projected
in a 2013 study.



WAPA, partners broker agreement, save money

WAPA, the Northern California Power Agency and Silicon Valley Power joined together in December 2015 to broker a Market Efficiency Enhancement Agreement with the California Independent System Operator Corporation. The agreement increased the value of federal hydropower produced as part of the Central Valley Project in northern California; it also opened the door for additional WAPA customers who later chose to sign onto the agreement.

By Sept. 29—less than a year from its inception—the MEEA saved customers more than \$1.5 million in energy costs.

Annually, WAPA's Sierra Nevada region schedules an average of 700,000 megawatt-hours into the CAISO day-ahead market and an average of 230,000 MWhs of hydropower into the real-time CAISO market. This renewable, cost-based energy serves WAPA's customers within CAISO's footprint. The agreement saves money by leveraging specific price locations rather than an aggregate price for WAPA to import energy to customers.

By continuing the conversations, participating in regional forums and monitoring industry activities, WAPA remains well positioned to leverage emerging trends, anticipate required changes and best represent customer interests in an ever-changing electric industry.



By Sept. 29—less than a year from its inception—the MEEA has saved customers more than **\$1.5 million** in energy costs.

WAPA rounds up fall protection experts

More than 190 attendees from across the U.S. met in May in Loveland, Colorado, to share best practices in utility fieldwork, get an update on federal regulations and learn about the latest advances in safety equipment at the 2016 Fall Protection Symposium.

The symposium, co-sponsored by WAPA and Tri-State Generation and Transmission Association, targeted linemen who do transmission work as well as field professionals who work at substations and communication sites. The event focused on addressing Occupational Safety and Health Administration fall protection standards that were introduced in 2014 and offered solutions as on-the-job safety has become increasingly complex.

WAPA is a recognized leader in fall protection training. Its efforts to develop trainers and partner on industrywide events ensures crews have the tools, knowledge and training to safely complete work.



Working together, exceeding standards

As the July 1 deadline to incorporate the North American Electric Reliability Corporation's Critical Infrastructure Protection version 5, or CIPv5, Standards ticked closer, WAPA was set to complete the project on schedule and ensure the standards were fully integrated into business practices.

The CIPv5 Implementation Team—made up of 26 core members and an additional 31 participants from Operations, Maintenance, Information Technology, Security and other programs—broke down the effort into 27 subordinate projects to standardize the process for determining and tracking the specifics of WAPA's cyber and physical assets. The team aimed to demonstrate a clear understanding of corporate efficiency, functional inter-relationships and the end goal, which was to verify that efforts would protect the bulk electric system following NERC critical infrastructure protection standards.

On Jan. 21, FERC approved version 6 of the CIP standards that brought more requirements into scope. The effective date for the new requirements was March 31. Because the changes required more time and effort, FERC responded to industry questions by extending the CIP implementation date to July 1. The extension also gave the Implementation Team time to look at the gaps and seams between the 27 sub-projects, and make sure plans were in place for aligning the efforts into the larger project.

CIPv5/6 implementation

Number of requirements

38

Start date

December 2014

Deadline

July 1, 2016

Number of sub-projects

27

Number of
project participants

57

Project work hours

~39,000

Operational highlight



WAPA receives technology award

In March, the Electric Power Research Institute awarded WAPA its Technology Transfer Award, which recognizes industry leaders and innovators who adopt new technology and exemplify the initiative and collaboration that transforms research into results.

WAPA received the award for providing leadership and fostering partnership with multiple major utilities on an important safety-related project that addressed new Occupational Safety and Health Administration rules for working around high-voltage lines. Titled "Categorize Line Transient Over-Voltage Values for Determining Minimum Approach Distances," the project results were used to verify that WAPA's existing MADs were safe to use by qualified electrical workers.

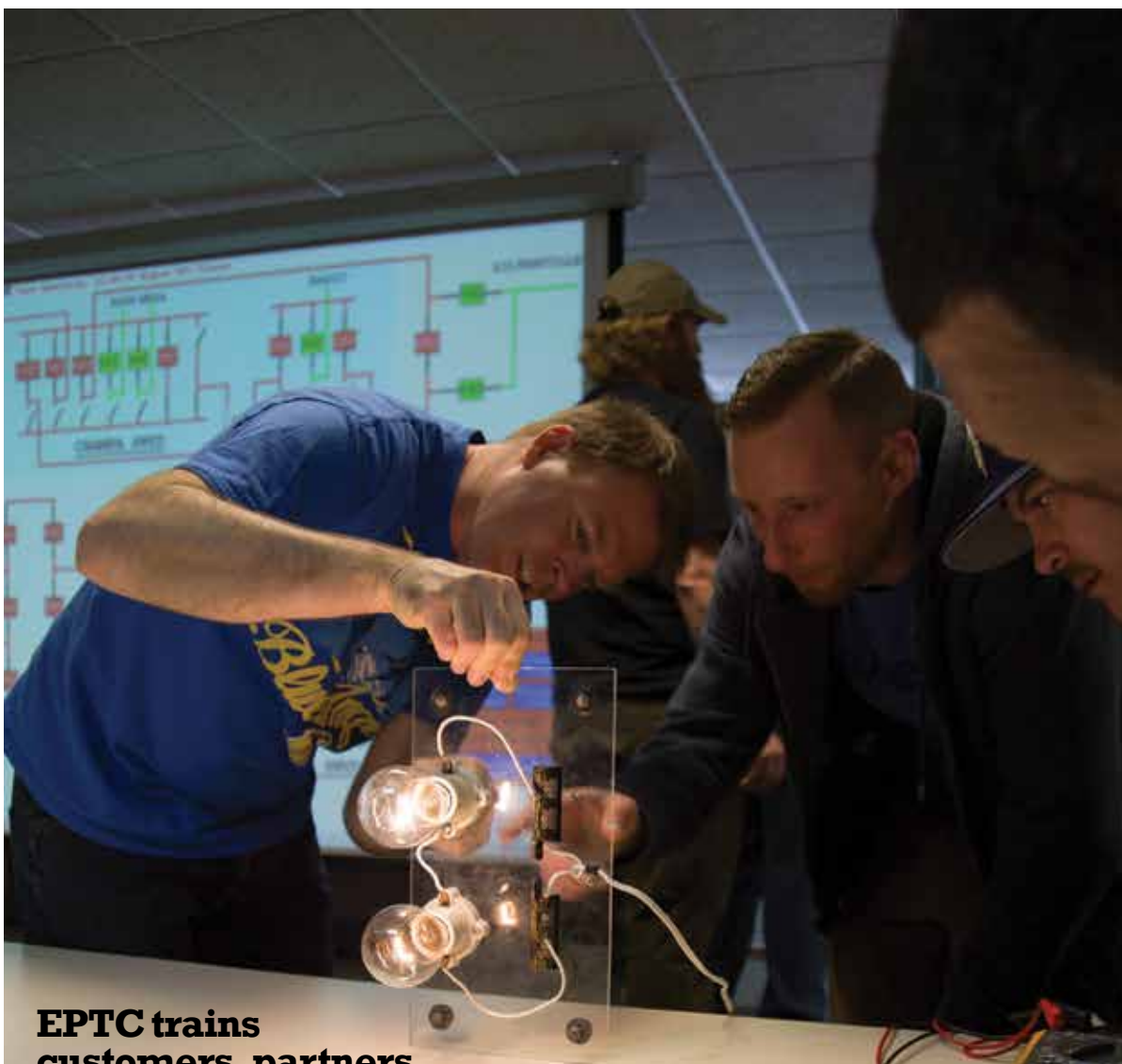
The project not only saved WAPA years of work conducting detailed engineering studies, but allowed the organization to safely continue its barehand, hot-stick work on energized lines.



Customers

The partnership between WAPA and its customers is at the forefront of the organization's mission. WAPA's success is also its customers' success. It is incumbent upon the organization to educate leaders about the importance of its mission and operations so it can continue to fulfill its promise to customers.

This is a lesson and a message made stronger when it is delivered together. WAPA asks for customer support in improving its processes and understanding that the entire organization aims to maintain customer resources at the cost-based rates enjoyed today and into the future.



EPTC trains customers, partners

Located in Golden, Colorado, WAPA's Electric Power Training Center provides high-quality power system operations training, ensuring that grid operators are knowledgeable, capable and up to date in their understanding of the field. Courses are designed for a wide range of audiences including powerplant operators, dispatchers, engineers

and anyone with an interest in learning about the principles and operation of power generation, transmission and interconnected system operations. Many courses qualify for North American Electric Reliability Corporation continuing education units.

The EPTC's skilled instructional staff is also equipped with powerful simulation tools, including the unique Miniature Power System, which is a self-contained, fully operational power system simulator with more than 40 full-size panels of operator controls. It includes three generators, a wind farm, four substations, hundreds of miles of transmission lines, a dispatch center and a variety of loads spread throughout the system.

**In FY 2016,
the EPTC hosted**

26

classes

403

students

765

visitors, including

40

congressional staffers

Students engage in an electrical problem-solving exercise at the EPTC, April 19.
(Photo by Travis Weger)

A helicopter is shown from a low angle, hoisting a worker by a rope. The helicopter is brown and white, with the number 'N619' visible on its side. The worker is suspended in the air, wearing a harness and a helmet. The background is a clear blue sky.

Aviation numbers

Hours flown

1,293

Miles flown

38,000+

Long-line helicopter work

Jobs completed

9

Linemen trained

41

Miles of line maintained

93

Hours worked

262.5

Helicopters support patrol, repair work

WAPA's fleet of three helicopters serves as a valuable resource, representing WAPA's commitment to its customers and the reliable supply of energy on which they depend. The helicopters' speed and maneuverability allow field employees to accomplish some tasks more easily, quickly and efficiently.

Many of WAPA's functions rely on helicopter support: Communication, Safety, Environment and Lands, Security, Construction and Maintenance. WAPA's helicopters and pilots are also called upon to respond to emergencies and assist neighboring utilities and partner agencies.

For this reason, WAPA's pilots undergo extensive training that rivals that of the airline industry. For comparison, the Federal Aviation Administration requires passenger and cargo pilots to have a minimum of 1,500 hours of experience. WAPA requires 3,000 hours.

In addition to its own fleet, WAPA uses subcontracted helicopters to help crews perform maintenance work. Helicopters also increase access to some sites.

For example, Sierra Nevada line crews used long-line helicopter techniques in September to service 30 dead-end towers in three days, whereas climbing would have taken about one day per tower.



Administrator and CEO Mark A. Gabriel attended the Kayenta Solar Farm groundbreaking ceremony on the Navajo Nation in Arizona, April 23. (Photo by Teresa Plant)

Breaking ground on grid modernization

In April, WAPA and the Navajo Tribal Utility Authority broke ground on a 27.5-megawatt solar farm in Kayenta, Arizona.

An important part of delivering on WAPA's mission is cultivating relationships with tribal customers. This new facility promotes grid modernization, inclusion of renewables and the creation of new economic opportunities by a tribal utility.

The Navajo Nation is WAPA's largest tribal customer and the Kayenta Solar Farm is the largest energy project owned by Native Americans. This is significant because 75 percent of all the people in the U.S. who do not have electric power live on the Navajo Nation.

Bringing a large-scale renewable energy project to the Navajo Nation has been a longtime goal of the tribal utility.

Proposed line to enhance reliability

WAPA, in cooperation with the Sacramento Municipal Utility District, has proposed the new 500-kilovolt Colusa-Sutter Transmission Line to provide a new link between the California-Oregon Transmission Project and WAPA's and SMUD's facilities on the east side of the Sacramento Valley.

The CoSu line would improve the electrical grid for Northern California and enhance reliability for customers in the region. The

project provides a new energy pathway for SMUD to import power from and export power to other energy markets, helping SMUD meet its goals of reducing greenhouse gas emissions and increasing its use of energy from renewable resources.

The CoSu project would also reduce strain on WAPA's transmission lines, delaying or avoiding costly upgrades, which itself is an additional benefit to customers.

Operational highlight



Spare transformer provides backup

When delivering reliable power every moment of the day to thousands of Americans in the Southwest, having backup plans and replacement equipment is vital.

At 50 years old, the 345/230-kilovolt transformer at the Mead Substation was reliable, but it was also nearing the end of its useful life. WAPA had a spare transformer at the Liberty Substation, and took steps to replace the one at Mead to avoid risk of failure.

Because this was a crucial piece of equipment, the transformer was disassembled and relocated—all 213 tons of it—by heavy-transport vehicles to Mead Substation, where it was reassembled and prepared for action.

WAPA's Desert Southwest customers benefit from the initiative, as the undertaking prevented potential unnecessary outage time.



Public



ne of WAPA's most powerful, yet least visible, partnerships is with the American public. Although individual consumers will never see an

electricity bill from WAPA, WAPA markets the power that ultimately reaches more than 40 million Americans in the West.

WAPA, like all its federal partners, exists to be a good, effective steward of public resources. That stewardship extends to both natural and financial resources. WAPA's first administrator, Robert McPhail, wrote that WAPA "inherited a public trust to provide efficient, reliable and economical electrical energy." WAPA's partnership with the public remains an integral part of its mission. Working together, this partnership helps communities throughout the West power their economies while protecting natural resources.

Protecting natural resources

WAPA's Natural Resources staff is often the focal point of the organization's interface with the public. They oversee environmental compliance and complete reviews to ensure biological and cultural resources are protected. Additionally, they ensure land issues are handled fairly in the best interest of the public. Because of this work, they serve as the face of WAPA to some property owners, tribal members and other agencies. Their interactions keep our relationships ongoing and create a path forward for future projects.



In January, the Natural Resources staff reported the following accomplishments

- Completed **123** Categorical Exclusions
- Completed **5** Environmental Assessments
- Issued **5** Findings of "No Significant Impact"
- Completed **3** Environmental Impact Statements
- Issued **3** Records of Decision under the National Environmental Policy Act

Additionally, they reported that they had

- Acquired land rights for **several** new substations and numerous easements for new transmission line construction and maintenance upgrades
- Maintained **155** Spill Prevention, Control and Countermeasure plans across **13** states
- Conserved roughly **5,100** metric tons of wood poles, cross arms, mineral oil and dielectric fluid, capacitors, transformer, concrete, asphalt and other items
- Disposed of **1.5** metric tons of polychlorinated biphenyl-contaminated equipment and materials

The National Environmental Policy Act provides one of the most visible displays of WAPA's partnership with the public. NEPA requires all federal actions to undergo a review and disclosure of the environmental impacts of those actions. As a part of that review, the public has an opportunity to provide comments. Those comments help WAPA better address impacts and develop projects.

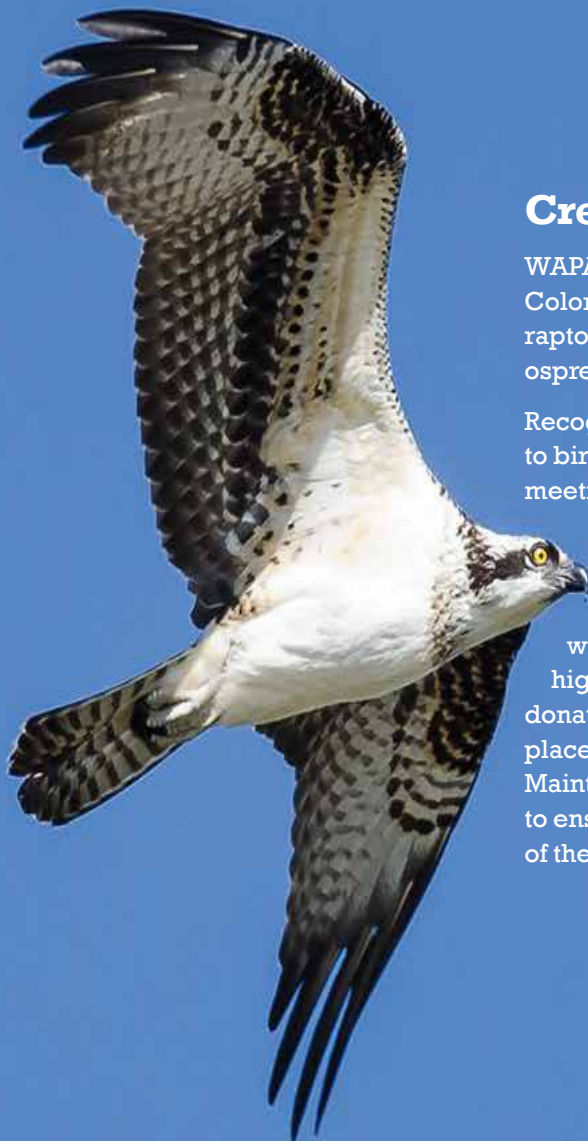


WAPA seeks input on proposed line

In Fiscal Year 2016, WAPA's partnership with the public was on display in the scoping process for the Colusa-Sutter Transmission Line. WAPA and the Sacramento Municipal Utility District are studying the potential to build a new 500-kilovolt transmission line. The project would enhance the reliability of the electrical grid in Northern California and increase SMUD's ability to import power into the Sacramento area from the Pacific Northwest. It would also allow Northern Californians access to larger amounts of imported low carbon and renewable energy, which is good for the environment locally, regionally and globally.

The first round of scoping, during which public comments regarding the project were solicited, ran from December 2015 to April 2016. As part of this process, WAPA and SMUD held public meetings in January and February to collect public input and comments on the proposed line. Based on those comments another alternative for the project was identified and requires additional scoping for all the project alternatives.

The project would enhance the reliability of the electrical grid in Northern California and increase SMUD's ability to import power into the Sacramento area from the Pacific Northwest.

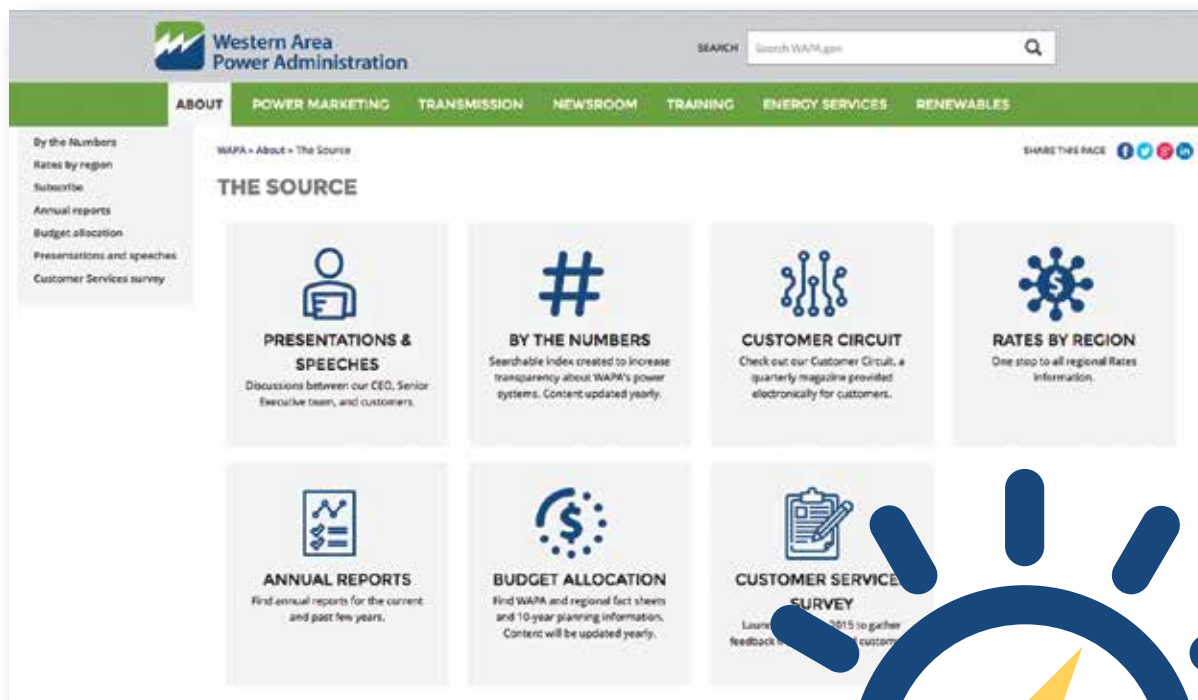


Crews build platform for birds

WAPA partnered with the Bureau of Reclamation, Colorado Division of Parks and Wildlife and a local raptor advocate to install a new nesting platform for ospreys near Lake Estes in Estes Park, Colorado.

Recognizing that transmission systems pose hazards to birds, WAPA is committed to protecting birds while meeting its mission.

Rocky Mountain linemen installed the new structure, Nov. 10, 2015. The optimal nesting location for ospreys is the highest point near water, and the new platform—almost six stories high—provides both. WAPA's Rocky Mountain region donated the 60-foot pole and crew time to provide a safe place for the ospreys to nest. WAPA's Environment and Maintenance divisions partner on projects like this one to ensure WAPA serves the community as a good steward of the surrounding ecosystems.



New site offers increased transparency

WAPA recognizes that in this technological era, people are accustomed to having information at their fingertips. In response to that and a commitment to transparency, the organization launched The Source, March 17—a new website dedicated to displaying operational data and financial information in one convenient location.

The Source provides a one-stop shop for WAPA's annual reports, budget allocation, presentations and speeches, regional rates and a "By the Numbers" section that includes a searchable index of WAPA's power systems.

The Source precedes WAPA's website redesign project. Both initiatives share the same driver: to enhance and expand transparency and to improve our website functionality.

Operational highlight



DOE event engages next-generation scientists

The Department of Energy created the National Science Bowl in 1991 to encourage students to excel in mathematics and science and to pursue careers in these fields. Teams from around the country face off in a fast-paced question-and-answer format, and are tested on a range of science disciplines including biology, chemistry, Earth science, physics, energy and math.

Each year, WAPA employees volunteer as judges, timers and moderators at regional events. In FY 2016, WAPA hosted regional events between January and March, leading up to the national competition where more than 110 teams competed for the title.



Employees

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APA's employees are at the center of the organization, carrying out its mission.

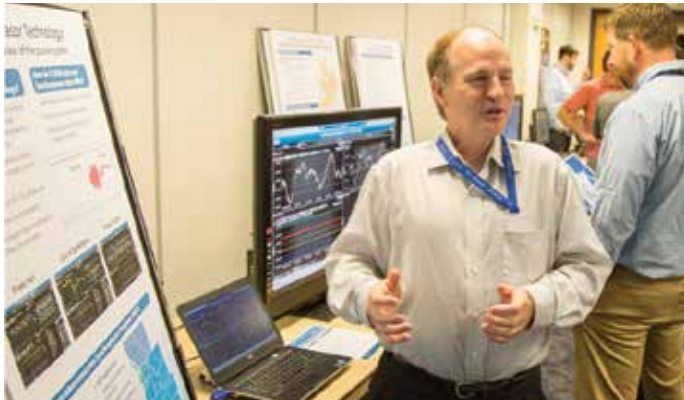
Although spread across a vast and diverse territory spanning 15 states, WAPA employees partner with one another to develop innovative solutions both in the field and at its 49 offices.

Whether serving in an administrative capacity, working around the clock in one of four operations centers, or maintaining critical assets on the ground or atop a 400-foot tower, WAPA employees are connected to one another as they carry out the organization's mission. The *Strategic Roadmap 2024* guides employees so WAPA can continue to manage resources effectively and operate safely, securely and reliably in a changing industry.

New event spotlights technology, innovation

WAPA held its inaugural Technology and Innovation Summit, May 24, at Headquarters in Lakewood, Colorado. More than 100 people gathered to recognize creativity and inspire innovation in the development and implementation of emerging technologies. Of the 64 projects submitted for nomination, four were honored with awards.

The event organizers invited keynote speakers from Bonneville Power Administration and the Sacramento Municipal Utility District to share their perspectives and experience about the importance of innovation in this time of exponential industry change. Speakers encouraged employees to continue with their efforts and to focus on mission-related problems. They also encouraged employees to incorporate change management and continuous process improvement efforts to help assuage internal resistance to change.



Electrical Engineer Pat Kautzman talks about his synchrophasor poster.

Electrical Engineer Gary Zevenbergen's model demonstrates ground potential rise. (Photos by Travis Weger)



T&I awards were given for

- Inventing a device that allows overhead static wires on wooden H-frames to be disconnected under tension and lifted so the connection hardware can be more easily replaced
- Developing a virtual high-resolution video system that enables office employees to have access and visibility about system conditions without always having to go out into the field
- Developing and calculating new safe minimum working distances for maintenance employees working with high-voltage equipment
- Developing a WAPA-wide approach to identify and automate the collection and monitoring of dissolved gases to measure the health of transformers



Craft leaders learn big picture

The second year of WAPA's inaugural Craft Leadership Development Program brought participants together in Folsom, California, and Loveland, Colorado, to continue honing their leadership competencies and further solidifying their foundation for future leadership roles.

CLDP participants serve on committees, attend classes, complete reading assignments and fulfill temporary assignments outside their regular jobs. This year they received training on team building, communication, problem solving and interview preparation.

In January, during a tour of WAPA's Sierra Nevada office, CLDP members visited the Folsom Operations Center, Folsom Dam—an integral part of the Central Valley Project—and the Historic Folsom Powerhouse, one of the oldest hydroelectric facilities in the world. They also learned what happens behind the scenes during outage coordination.

The CLDP visited WAPA's Rocky Mountain office in June, where they toured the Operations Center and learned about the region's warehouse and fleet. They also received overviews on finance, asset management, engineering and the laws that dictate how WAPA markets power.

Employees launch inclusion effort

In April, more than 20 employees from around WAPA met to complete a two-day training and launch the organization's Inclusion and Diversity Committee, a group brought together to create a sustainable and meaningful inclusion and diversity program.

Key takeaways from the IDC launch:

- Diversity and inclusion is no longer just about compliance, speakers and videos; it is about changing the culture and behaviors of an organization to produce a high-performing workforce.
- Efforts to increase diversity in the workforce are more successful when the workplace can support that diversity through a culture of inclusion.

The IDC is guided by WAPA's Strategic Roadmap and Tactical Action Plan. The IDC will promote diversity and inclusion through activities and initiatives and demonstrating the value of D+I in the workplace.



Leadership councils support strategy

WAPA's philosophy of strategic governance calls upon its senior executives, vice presidents and program managers to collaborate across regions and functions for the betterment of the organization. The best example of this plays out in practice through leadership councils. Each council supports one or more strategic areas of development WAPA-wide and is sponsored by a senior executive.

The councils gathered for their second annual Council Summit, July 19, at WAPA Headquarters in Lakewood, Colorado.

WAPA's leadership councils

- Financial Leadership Council
- Power Marketing Management Council
- WAPA Maintenance Management Council
- Power Systems Operations Council
- Information Technology Senior Leadership Team

Operational highlight



WAPA launches educational video series

Public Affairs, in partnership with functions and divisions across the organization, launched a "What the heck is ... ?" video series, May 23. The educational videos, created by employees for employees, shine a light on lesser known or complex aspects of WAPA's business.

In addition to the launch video, featuring the Colorado River Storage Project Management Center employees who came up with the idea, Fiscal Year 2016 also featured videos about Public Affairs, leadership councils and switching.



Government

In December 1977, high gas prices and an emphasis on conservation led Congress to create the Department of Energy and WAPA, which positioned the organization to be a partner in government from Day One.

To continue to fulfill its mission, WAPA must not only remain aligned with DOE goals, but also cultivate relationships and an understanding of other federal agencies' priorities and jurisdiction. From organizations within the Department of the Interior—including the Bureaus of Reclamation and Land Management—to the U.S. Fish and Wildlife Service, the Army Corps of Engineers, the Environmental Protection Agency, the State Department and the Federal Energy Regulatory Commission, WAPA works closely to protect its assets and resources while respecting interests of other agencies charged with protecting our nation.



Biologists partner to save species

WAPA partners with government agencies and stakeholders to protect and recover endangered species. In 1988, the U.S. Fish and Wildlife Service implemented a collaborative program to recover four endangered fish of the Colorado River. WAPA became a program partner and provides a portion of hydropower revenues, collected from Colorado River Storage Project customers, to support ongoing recovery activities.

Since then, WAPA's Colorado River Storage Project Management Center staff and biologists have played an integral role in the recovery efforts. Because of hydropower impacts, the CRSP MC is directly involved in the Glen Canyon Dam Adaptive Management Program and the Upper Colorado River Endangered Fish Recovery Program.

Each program seeks to recover native fish populations by working across federal, state and local government lines and a bevy of interested stakeholders. These initiatives help build consensus for action at multiple levels of government, which in turn supports recovery of the fish while balancing other priorities along the river such as recreation, development of water resources and hydropower production.

In Fiscal Year 2016, the humpback chub recovery team developed a Species Status Assessment and provided it to Fish & Wildlife. A final recovery plan is expected in 2017. In the meantime, the humpback chub is doing well overall and holding its own in the upper basin. In the lower basin, the humpback chub population has tripled since 2000, and is expanding in the lower river as Lake Mead continues to drop and riverine habitat emerges.

Each program seeks to recover native fish populations by working across federal, state and local government lines and a bevy of interested stakeholders.

Federal partnership generates electricity

The Department of the Navy, Sempra U.S. Gas & Power, and WAPA signed contracts in 2015 entering into the largest purchase of renewable energy ever made by a federal entity.

Less than a year later, on Aug. 30, 2016, the first power block of the 210-megawatt direct-current solar facility project began generating electricity. When fully operational, the project will contribute 21 percent of the energy needed to meet the Navy's one-gigawatt goal.

Ultimately, the solar facility in Arizona, named Mesquite Solar 3, will provide one-third of the power needed for 14 Navy and Marine Corps installations in California.

“Our long-standing partnership with the Navy is a perfect example of our mission dedication. Together, we strengthen coordination efforts to enhance national energy security and demonstrate federal government leadership as our nation transitions to a low-carbon economy. Today, we celebrate the culmination of that partnership, of innovation and technology, and a better way of doing business.”

– MARK A. GABRIEL,
WAPA Administrator and CEO



Assistant Secretary of the Navy for Energy, Installations & Environment Dennis V. McGinn addresses a crowd at the Mesquite Solar 3 dedication in Arizona, Oct. 14. (Photo by Kara Lamb)



Real-world expertise supports DOE strategy

WAPA is proactively engaging with the Department of Energy on strategic initiatives and contributing to solutions on national security issues.

In Fiscal Year 2016, WAPA provided technical expertise on three projects to optimize DOE investments. WAPA's real-world operational experience allows the organization to provide feedback on research methods, assumptions and conclusions.

- **Interconnection Seams Project**

This DOE project, led by the National Renewable Energy Laboratory, supports grid modernization by exploring tighter integration of the U.S. interconnections.

- **SunShot Initiative**

This initiative funds a research program at NREL that analyzes the role of solar power in grid operations, specifically exploring ways to mitigate the impacts of the solar resource variability.

- **Strategic Transformer Reserve Study**

In response to FAST Act—legislation requiring DOE to submit a plan to Congress establishing a Strategic Transformer Reserve—DOE's Office of Electricity Delivery and Energy Reliability is sponsoring a study that will provide options for a national transformer reserve.



Operational highlight



WAPA supports interconnection efforts

In 2014, WAPA received a transmission service request from the Bureau of Reclamation to interconnect several key San Luis Unit facilities to WAPA's Central Valley Project system to support their continued economic delivery of federal water. The San Luis & Delta-Mendota Water Authority, under agreement with Reclamation, operates and maintains a part of the San Luis Unit.

WAPA and the Authority have conducted the environmental review for the project. The final record of decision was announced on April 29.

The San Luis Transmission Project consists of 95 miles of new transmission lines along the foothills of the Diablo Range in San Joaquin Valley, California. The project also includes substation improvements, communication facilities, improvements to existing access roads, new permanent access roads and temporary access roads.



Customer IRP Summary



APA's Integrated Resource Planning requirements, outlined in Section 114 of the Energy Policy Act of 1992, give customers several options to comply with the law's energy planning clauses. Under WAPA's requirements, customers must submit annual progress reports and new integrated resource plans every five years, either individually or cooperatively. Customers who meet specific criteria are also allowed to choose from three additional IRP reporting options—small customer plans, minimum investment reports or energy efficiency and renewable energy reports—instead of a full IRP. All firm electric power customers have submitted one of these options.

In FY 2016, WAPA received

- 88 IRPs from individual customers
- 7 plans from cooperatives
- 20 minimum investment reports
- 81 small customer plans

Top 5 demand-side management activities

- Lighting
- Air conditioning upgrades
- Rebates
- Audits
- Motors/adjustable speed drives

Top 5 renewable energy resource choices

- Solar
- Wind
- Small hydro
- Biomass/gas
- Geothermal

Customer IRP Accomplishments

Item	CRSP MC ¹	DSW	RM	SN	UGP	Totals
DSM ² savings (kW)	58,282	196,811	350,983	2,563,879	1,494,911	4,664,866
DSM savings (kWh)	41,148,378	1,031,463,200	673,216,497	11,978,501,149	303,460,043	14,027,789,267
DSM expenditure (\$)	14,390,360	150,572,148	27,023,085	42,462,724	41,022,460	275,470,777
DSM deviations ³ (\$)	449,010	-3,415,167	7,497,971	3,093,339	10,093,028	17,718,181
Renewables (kW)	1,017,916	390,450	1,267,843	1,884,696	1,706,045	6,266,950
Renewables (kWh)	1,318,773,360	2,601,609,636	4,650,651,559	5,948,074,138	5,968,664,255	20,487,772,948
Renewable expenditure (\$)	42,368,001	66,448,969	149,890,548	185,933,111	119,252,629	563,893,258
Renewable program types	Green tags, wind, solar, hydro, geothermal, biomass/gas	Green tags, wind, solar, hydro, geothermal, biomass/gas	White/green tags, wind, solar, hydro, biomass/gas	Green tags, wind, solar, hydro, geothermal, biomass/gas	Green tags, wind, solar, hydro, biomass/gas	Green tags, wind, solar, hydro, geothermal, biomass/gas
Top 5 most frequent DSM activities	Lighting, AC, rebates, audits, refrigerator/freezer	Lighting, AC, rebates, audits, refrigerator/freezer	Lighting, AC, motors, audits, rebates	Lighting, AC, rebates, audits, refrigerator/freezer	Lighting, AC, rebates, motors, HVAC	Lighting, AC, rebates, audits, motors
Top 5 renewable energy activities	Solar, hydro, wind, geothermal, biogas	Geothermal, solar, hydro, wind, biomass	Wind, hydro, solar, green/white tags, biomass/gas	Solar, hydro, wind, geothermal, biogas	Wind, solar, green tags, hydro, biomass	Solar, wind, hydro, geothermal, green tags
# of IRPs from customers	22	15	24	12	15	88
# of IRPs - Cooperatives	7 (comprised of 87 entities in total)	0	0	0	0	7
# of MIRs	0	2	5	3	10	20
# of SCs	0	12	27	29	13	81

¹ WAPA's Colorado River Storage Project Management Center reports on the calendar year rather than the fiscal year. These numbers reflect CY 2015, rather than FY 2016.

² DSM refers to demand-side management activities the utility conducts to change customer energy use.

³ Deviations are any difference from the customer's integrated resource plan.



People and dollars



How WAPA effectively applies and manages its resources—a workforce of 1,454 federal employees and \$1 billion program—is central to its success in delivering on its mission and operating safely, securely and reliably. Below is an illustration of where WAPA’s people and dollars were deployed in Fiscal Year 2016.

Almost half of WAPA’s employees supported the reliability of the electric grid, and the largest percentage of funds was attributed to the agency’s marketing function, which includes purchase power and wheeling.

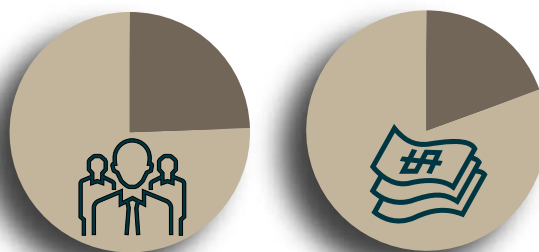
These figures do not include earmarks, reimbursable activity or the resources assigned to the Transmission Infrastructure Program.

Reliability



653 people and **28 percent**
of dollars invested in maintenance
and related areas

Delivery



354 people and **18 percent**
of dollars dedicated to power operations
and engineering areas

Marketing

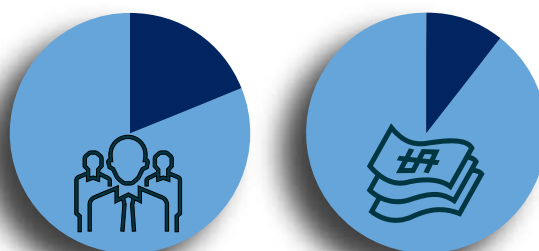
including purchase power and wheeling



164 people and **43 percent**
of dollars committed to power marketing areas

Cost-based

and related services



283 people and **11 percent**
of dollars applied to support the mission

Senior Executive Team

Administrator and Chief Executive Officer	MARK A. GABRIEL
Executive Vice President and Chief Operations Officer	TONY MONTOYA
SVP and Chief Financial Officer (acting)	DENNIS SULLIVAN
SVP and Chief Information Officer	DAWN ROTH LINDELL
SVP and Assistant Administrator for Corporate Liaison	MIKE McELHANY
SVP and General Counsel	JOHN BREMER
SVP and Transmission Infrastructure Program Manager	TRACEY LeBEAU
SVP and Colorado River Storage Project Management Center Manager	LYNN JEKA
SVP and Desert Southwest Regional Manager	RON MOULTON
SVP and Rocky Mountain Regional Manager	BRAD WARREN
SVP and Sierra Nevada Regional Manager	SUBHASH PALURU
SVP and Upper Great Plains Regional Manager	BOB HARRIS

EX-OFFICIO MEMBERS

Power Marketing Advisor	RODNEY BAILEY
Senior Human Resources Business Partner	TERESA GARCIA
Chief of Staff	ERIN GREEN
Economic Impact and Diversity Manager	CHARLES MARQUEZ
Chief Public Affairs Officer	TERESA PLANT
PMA Human Resources Shared Service Center Director	LIZA ROSA
Chief Strategy Integrator	DENNIS SULLIVAN



Contact WAPA

Call or write your local WAPA office or Public Affairs in Lakewood, Colorado, to share your comments or to find out more about WAPA.

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Visit our website at www.wapa.gov.

Send email to PublicAffairs@wapa.gov.

For no-cost, energy-related technical assistance within WAPA's service territory,
call 1.800.POWERLN (1.800.769.3756), or log on to www.wapa.gov/es.



**Western Area
Power Administration**

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